

(PCT Article 36 and Rule 70)

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/006883

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language _____ which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-7 _____ as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- nos. _____ as originally filed/furnished
- nos.* _____ as amended (together with any statement) under Article 19
- nos.* 1-7 _____ received by this Authority on 18.03.2005 with letter
- nos.* _____ received by this Authority on of 11.03.2005
- ☒ the drawings:
- sheets 1/2-2/2 _____ as originally filed/furnished
- sheets* _____ received by this Authority on _____
- sheets* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
Novelty (N)	Claims		YES
	Claims	1-7	NO
Inventive step (IS)	Claims		YES
	Claims	1-7	NO
Industrial applicability (IA)	Claims	1-7	YES
	Claims		NO
2. Citations and explanations (Rule 70.7)			
1. PRODUCT (claim 1)			
1.1 The subject matter of the claim is unclear (PCT Article 6) because it is in part defined by the method of production. Apart from the fact that the diameter ratios between blank and finished pipe section belong to the method (see §3 below), the limits of the deformation and consequently also the cross-sectional shape in the finished pipe are unclear.			
The claim is not limited to the case that the largest part of the enlargement takes place in the plane normal to the bending plane, which - according to the application - appears useful for avoiding buckling, yet includes, inter alia, the following maximum values:			
- Case (a)			
degree of enlargement in the bending plane = 1;			
degree of enlargement normal to the bending plane = 1.			

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The blank is not enlarged within the
inside hydroforming tool.

- Case (b)

degree of enlargement in the bending plane
= 0.9;

degree of enlargement normal to the
bending plane = 1.

The blank is enlarged in the same way as
in **US-A-5 269 650 (D2)**.

1.2 Thus, the subject matter of the claim is not novel
or at least not inventive (PCT Article 33(1), (2))
in relation to the prior art according to **US-A-2
837 810 (D1)** and **US-A-5 269 650 (D2)**. **D1** and **D2**
each disclose a pipe section with at least one
arcuate region and two adjoining transition
regions at each end, the arcuate region having a
cross-sectional shape different from that of the
transition regions, with *approximately* identical
flow area: see **D1**, figures (the regions directly
adjacent the curve can be considered as transition
regions of the pipe) as well as **D2**, fig. 4-6 and
column 2, lines 54-59.

2. APPARATUS (claims 2-5)

2.1 Remarks similar those concerning degree of
enlargement in claim 1 also apply to claim 2.
As claim 2 says nothing about essential parts of
the apparatus - such as the two feed rams (2, 3)
with their particular shape and relation to the

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diameter of the transition regions (which makes an enlargement of the transition regions possible) as per fig. 1 and 2, the apparatus also cannot be considered novel or inventive in relation to the prior art.

2.2 Dependent apparatus claims 3 to 6 all refer back to claim 2 and concern obvious embodiments of the apparatus for producing alternative shapes of pipe bend, which are known per se or do not demand any inventive activity on the part of a person skilled in the art to produce finished pipe according to the specific requirements for the field of application. In this respect see also the examples of pipe bends according to **US-B-6 390 142 (D3)** and **US-A-5 054 819 (D4)**, which have to be produced with the appropriate apparatus.

2.3 The prior art as a whole shows that the use of different parameters with regard to cross-sectional area and shape of pipe bends and corresponding apparatus does not demand an inventive step.

3. METHOD (claims 6 and 7)

3.1 Again, similar remarks as to clarity apply to the method. There is nothing to indicate a degree of enlargement in the transition regions that could be 1, just as in the arcuate region ($A/C = 1$ is not excluded).

Further, there is no mention of a degree of

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enlargement perpendicular to the bending plane,
which first appears in the subject matter of claim
7.

- 3.2 A method should clarify that both transition
regions and bending region are enlarged (that is
diameter ratios less than 1), the enlargement
perpendicular to the bending plane being greater
than in the bending plane.

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

See Box V.